U.S. Army Air Service

Above: BG William "Billy" Mitchell, USAAF
Right: B–17s fly bombing mission in Germany, April 1945

U.S. Air Force

Following the F–16 bombing raid in June 2006 that killed terrorist Abu Musab al-Zarqawi, President George W. Bush told reporters: "Zarqawi is dead, but the difficult and necessary mission in Iraq continues. We can expect the terrorists and insurgents to carry on without him. We can expect the sectarian violence to continue."[1] The subdued comments contrasted sharply with the positive assessments of airpower made by American political and military leaders during the "shock and awe" phase of the current Iraq war. Yet the President also contended that the raid enhanced the prospects for success in Iraq. "Zarqawi's death is a severe blow to al Qaeda," he stated. "It's a victory in the global war on terror, and it is an opportunity for Iraq's new government to turn the tide of the struggle."

A Strategy Based on Faith:

THE ENDURING APPEAL OF

By MARK CLODFELTER

PROGRESSIVE
AMERICAN AIRPOWER

148th American Aero Squadron prepares for daylight air raid

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U.S. Army (Edward O. Harris)

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It is unlikely that the President's initial observations indicate a seismic shift in how many American political and military chiefs view airpower effectiveness. Instead, President Bush's remarks illustrate an often unacknowledged aspect of American airpower thinking that traces its roots to the idealist notions of the Progressive Era. For the past eight decades, many progressive-minded airmen have argued that bombers offer a way to win wars more quickly and more cheaply than a reliance on surface forces. Vastly improved technology has reinforced the notion that bombing can achieve almost antiseptic results, and the idea of a near-bloodless victory has had a special appeal to Presidents as well as to Air Force pilots. That is not to say that progressive ideals have always dictated how America has used airpower. In some cases during the previous 80 years, progressive notions have remained dormant or been transformed; in others, they have been loudly articulated. Still, as the al-Zarqawi raid shows, they have never completely disappeared from the way American political and military leaders think about bombing. Thus, the progressive assumptions that have helped to shape the American approach to airpower merit close scrutiny.

Airpower is a term that includes both lethal and nonlethal uses of military force above the Earth's surface, but in this article, the term denotes *bombing*, the lethal application that has triggered the greatest amount of debate regarding its utility. The article's purpose is threefold: first, to examine the progressive roots of American airpower and how they have helped mold bombing concepts during the past eight decades; second, to explore why and how wartime Presidents have periodically embraced progressive tenets and married them with their war aims; and third, to show that the central premise of progressive airpower—that bombing is a rational, just military instrument because it makes war cheaper, quicker, and less painful for all sides than surface combat—is a *flawed* notion that frequently undercuts American political objectives and helps to achieve the antithesis of the desired results.

The progressive approach to airpower best supports political goals in a fast-paced, conventional war of movement conducted primarily in areas away from civilian populations. It is less suited to other types of war. In a total war for unconditional surrender such as World War II, the desire to eliminate the threat will likely eclipse the desire to reduce the enemy's pain. For limited unconventional conflicts such as Vietnam, or stagnant conventional conflicts such as Korea, Carl von Clausewitz's *friction*—the elements of danger, exertion, uncertainty, and chance that "distinguish real war from war on paper" and make "the apparently easy so difficult"[2]—often prevents airpower from helping to achieve political objectives. Friction prevents an antiseptic application of airpower in *all* types of wars. Yet in unconventional conflicts such as those the United States faces in Iraq and Afghanistan—against irregular enemies waging sporadic violence among civilians—friendly hearts and minds are vital to achieving such goals as "stability" and "security." In these heavily propagandized wars, which are the type that America will most likely fight in the years ahead, friction in the form of collateral damage not only undermines American goals but also bolsters the *enemy* cause. Accordingly, this essay argues that American leaders should jettison airpower's

the progressive approach to airpower best supports political goals in a fast-paced conventional war of movement conducted primarily away from civilian populations

progressive notions and the rhetoric that accompanies them.

Friction does not, of course, impact only aerial operations; it plagues any type of military activity. American ground forces in Iraq and Afghanistan have suffered from its effects, as have Army and Marine units in previous conflicts. Ground power, however, has rarely promised bloodless victory, while proponents of progressive airpower have often proclaimed near-flawless results—their goal has been to avoid ground combat and the losses that it engenders. This belief in a war-winning instrument that produces minimal death and destruction fed the airmen's clamor for a separate air force during the 1920s and 1930s and encouraged them to stress the independent "strategic" bombing mission over "tactical" air support for ground and sea forces. Since obtaining Service independence, Airmen have often touted progressive principles as justification for it.

Unfortunately, faith, not fact, has underpinned airpower's progressive promises. That faith cannot remove friction, nor can it make bombing an effective political instrument in today's conflicts. Airpower has many valuable attributes for the wars in Iraq and Afghanistan, especially its nonlethal applications such as reconnaissance and airlift. Bombing, however, is not the answer to achieving political goals in such unconventional conflicts, and to view it in progressive terms is to make a grave error that will likely lead to unwelcome repercussions.

8th Allied Air Force bombs aircraft plant in Paris, December 1943

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Progressive Prophecy

The concept of progressive airpower stems from the Progressive movement that consumed many American political, business, and social leaders during the late 19th and early 20th centuries. Providing a single definition for *progressivism* is difficult because the movement had many disparate threads. All focused on progress and reform and included efforts to reduce inefficiency and waste in manufacturing and business practices, eliminate corruption from government and business, increase the responsiveness of government institutions, promote fairness and equality for all social classes, improve working conditions and protect workers, and enhance the public's

MG Benjamin Delahauf Foulois, USAAF

U.S. Air Force

general well-being. At its heart, progressivism promised change that was just, rational, positive, and efficient. Republican Teddy Roosevelt and Democrat Woodrow Wilson both led the Nation as "progressive Presidents" and reflected the breadth of the movement, which had an international as well as a domestic focus.

President Wilson's appeal that "the world must be made safe for democracy" struck a responsive chord when he delivered his war message to Congress in April 1917. His Fourteen Points hinged on the progressive belief that his duty was not only to assure the survival of American democracy but also to foster democracy elsewhere. Compelled to project military force overseas, he would wield it in a

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many argued that bombing alone would win wars

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manner that could support his postwar desire to transplant America's democratic values. His messianic message set the tone for wartime Presidents who followed him. The United States in World War I would be John Winthrop's "city upon a hill," and "the eyes of all people" would see that the Nation adhered to decency and compassion as it waged war. "We desire no conquest, no dominion," Wilson told Congress. "We shall, I feel confident, conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and of fair play we profess to be fighting for."[3]

The harsh reality of World War I, which claimed more than 116,500 American lives and millions worldwide,[4] turned many Americans toward isolationism after the conflict, but the war had a different impact on a small group of airmen. These individuals, who included such visionaries as Billy Mitchell, Edgar Gorrell, and Benjamin Foulois, blended the ideals of the Progressive movement with their own distinctive thoughts about airpower to create a bombing philosophy that ultimately guided American defense thinking into the 21st century. Like their reformist predecessors who sought to eliminate waste and inefficiency from government and business, the airpower progressives aimed at refining the most violent of man's activities—war—and they would use the bomber and its associated technology as their instruments of positive change.

Through carefully applied doses of airpower, they intended to produce victory more quickly and more cheaply than by relying on

ground forces. They planned to achieve rapid success by wrecking the key elements of an enemy's warmaking potential—components that originally consisted of industry and infrastructure but that later expanded to include leadership and its decisionmaking apparatus. The battlefield use of airpower received short shrift. With fresh memories of slaughter on the Western Front, matched by a tremendous desire for Service independence, they focused on *strategic* bombing to destroy the vital elements of an enemy's warmaking capability and to obviate the need for extensive Army operations. Many even argued that bombing alone would win wars. Moreover, bombing would make war's impact less severe for all sides; its rapid results would produce fewer deaths and less destruction than surface combat. The logic of their argument resembled that of the muckraker writers who believed that excising commercial corruption would produce ethical and efficient business practices. Comparing a future conflict to the horror of trench warfare, the progressive-minded Mitchell wrote in 1924 that bombing would "result in a diminished loss of life and treasure and will thus be a distinct *benefit* to civilization."[5]

Mitchell's vision of war was a total, all-consuming effort by a nation-state, waged to vanquish the opposition. That vision sought to avoid the widespread butchery that had typified World War I battlefields and relied on aviation, "a progressive element," to transform war.[6] By quickly and efficiently destroying an enemy's economic vital centers—the perceived essence of a state's ability to fight "modern" war—aircraft would preclude the need to fight wasteful ground battles. These views reflected the perspectives of British Air Marshal Hugh Trenchard and Italian General Giulio Douhet. Mitchell had met Trenchard, the "father" of the Royal Air Force, during World War I, and had taken his calls for an independent air force, capable of attacking strategic targets, to heart. Douhet, whose seminal 1921 book *The Command of the Air* also stressed the merits of an independent striking force, impressed Mitchell during a 1922 European tour in which the two met. Trenchard and Douhet were progressives in their own right, and their notions helped to shape Mitchell's thinking. Mitchell agreed with both that civilians were now vital to waging modern war, and, as such, they had become legitimate targets in it. He further accepted their social Darwinist view that civilian will was fragile and that bombs could wreck it, but, unlike Trenchard and Douhet, he

did not think that attacking civilians directly was the ideal way to produce victory. Instead, Mitchell called for the rapid destruction of an enemy's warmaking capability: "Air forces will attack centers of production of all kinds, means of transportation, agricultural areas, ports and shipping; not so much the people themselves."[7] Without the means to fight, surrender would result, eliminating the possibility of future slaughter such as that at Verdun or the Somme.

Though Mitchell vacillated about the propriety of bombing civilians, a dominant theme that emerged from his writing was the desire to sever the populace from sources of production. Airpower could intimidate civilians who supported the war effort, and, once bombed, they were unlikely to offer further assistance. "In the future, the mere threat of bombing a town by an air force will cause it to be evacuated and all work in munitions and supply factories to be stopped."[8] He thought that an aerial assault against Germany's heartland would have ended World War I without additional ground combat had the war continued into 1919.[9]

Mitchell's faith that bombing could rapidly produce a victory less costly than surface combat became gospel for many American airmen as they prepared for their next conflict. During the 1920s and 1930s at Maxwell Field's Air Corps Tactical School, officers studied bombing theory and learned that airpower could disrupt an enemy state's war machine by severing the seemingly delicate threads that comprised its "industrial web."

Besides depriving the armed forces of needed hardware and fuel, such attacks would also wreck the enemy nation's capacity to sustain normal day-to-day life, which should in turn destroy the will of its populace to fight. American aircraft would not have to bomb enemy civilians directly to achieve decisive results. "The direct attack of civilian populations is most repugnant to our humanitarian principles, and certainly it is a method of warfare that we would adopt only with great

America's war aim of unconditional surrender signified that the Nation would wreak havoc on Nazi Germany and Imperial Japan to achieve a total victory

reluctance and regret," observed Major Muir S. Fairchild in a 1938 Tactical School lecture. "Furthermore, aside from the psychological effects on the workers, this attack does not directly injure the war making capacity of the nation." Thus, Fairchild advocated attacks on the industrial web, which would have "the great virtue of reducing the capacity for war of the hostile nation, and of applying pressure to the population both at the same time and with equal efficiency and effectiveness."[10] For the industrial web theory to work, planners first had to identify correctly the essential threads of an enemy's industrial apparatus, and then airmen had to bomb them accurately. Both tasks were thorny propositions, and the second in particular was a tall order after Pearl Harbor.

Progressive Notions, Technological Limitations, and Unconditional Surrender

"Precision" bombing was a misnomer in World War II;[11] the technology for it was primitive by modern standards and required hundreds of aircraft flying in tight formation to drop their ordnance in a small area to guarantee the destruction of a single target. Opportunities for friction to disrupt the process abounded. Nonetheless, the lack of accuracy ultimately suited the character of the conflict. America's war aim of unconditional surrender signified that the Nation would wreak havoc on Nazi Germany and Imperial Japan to achieve a total victory. Distressed by the "stab-in-the-back" theory that the Nazis had used to help explain Germany's World War I defeat, President Franklin Roosevelt wanted to make certain that a similar mentality did not emerge after World War II. He also wanted to establish a postwar world grounded on his Four Freedoms. American bombers would help him achieve these goals. After listening on the radio to Adolf Hitler ranting during the 1938 Munich crisis, he told aide Harry Hopkins that he was "sure that we were going to get into war" and that "airpower would win it."[12] The

Phosphorus bombs used during maneuvers in France, 1918

U.S. Air Force

Billy Mitchell's 1st Provisional Air Brigade conducted controversial bombing tests against ships in 1921

U.S. Army (J.J. Marshall)

President was willing to use his air force with a vengeance. After learning that the 1943 Anglo-American bombing of Hamburg produced a firestorm killing an estimated 50,000 German civilians, Roosevelt called it "an impressive demonstration" of what American bombing might achieve against Japanese cities.[13]

American air leaders also believed that airpower was the proper instrument to guarantee Allied victory, but their preference was to use the bomber according to Air Corps Tactical School principles. "We must never allow the record of this war to convict us of throwing the strategic bomber at the man in the street," commented Lieutenant General Ira Eaker, who commanded the Eighth Air Force in 1942–1943 and the Mediterranean Allied Air Forces from 1943 to 1945.[14] Yet with existing technology, and the friction that resulted from trying to use it against intense air defenses and in unpredictable weather, Eaker's crews were incapable of hitting only military targets—a fact that he and other air commanders doubtless understood. Though they may have aimed at factories, oil facilities, and rail yards, their intent counted little to the 305,000 German civilians killed by the Anglo-American air campaign or the 330,000 Japanese civilians killed by American bombs.[15] In the end, "military necessity" overrode the scruples of air leaders. The need to secure air superiority over Europe before the D-Day invasion and the need to cut German oil supplies were only two of many requirements that spurred continued "strategic" bombing that was largely imprecise.[16] Moreover, especially in

> *airpower was not the pristine vehicle of finite destruction that Mitchell and his cohorts had predicted*

the Pacific as the war progressed, American air leaders felt meager compassion for an enemy they increasingly viewed as treacherous.

Although American airpower was a bludgeon, not a rapier, in World War II, many political and military leaders concluded that the strategic attacks on Germany and Japan had helped end the war faster than would have occurred without them. President Harry Truman believed that the atomic raids he sanctioned were no worse than the firebombing of Japan by Major General Curtis LeMay's B–29s and that Hiroshima and Nagasaki efficiently ended the war without the horrendous losses of an invasion. Similarly, LeMay surmised

that his firebombing would have produced a Japanese surrender without either an invasion or the atomic bombs, an assertion endorsed by the postwar U.S. Strategic Bombing Survey.[17] General Carl Spaatz, who had commanded America's bomber force in both Europe and the Pacific, perhaps best summarized the progressive views in his 1946 article in *Foreign Affairs*:

Our land and sea forces, supported by air, could be expected to contain the most advanced echelons of our enemies, and gradually drive their main armies into their heavily fortified citadels. But the essential question remained. How was their military power to be crushed behind their ramparts without undertaking an attritional war which might last years, which would cost wealth that centuries alone could repay and which would take untold millions of lives? . . . The development of a new technique was necessary. Some new instrument had to be found. . . . The outcome of the total war hung in the balance until that new technique had been found and proved decisive in all-out assault. The new instrument was Strategic Airpower.[18]

World War II transformed the progressive sentiments that had fostered America's faith in an airpower solution to war. The war was the type envisioned by Billy Mitchell and the Air Corps Tactical School instructors: a state-on-state conflict for total victory against

U.S. Air Force B–29s bomb targets in North Korea

enemies viewed as a direct threat to the security of the United States. Because of the severe nature of the threat, the limitations of technology, and the intense desire to vanquish the opposition, airpower was not the pristine vehicle of finite destruction that Mitchell and his cohorts had predicted. In World War II, progressivism equated to those measures that could speed American victory—and hence reduce American losses. Those goals trumped the desire to limit enemy casualties. Still, if the promise of precision bombing remained unfulfilled, airpower's brute force had seemingly delivered the goods.[19]

Korean Uncertainties

Brute force remained a central facet of American bombing philosophy during the postwar planning for an atomic attack on the Soviet Union, but America's next conflict called for a more restrained approach. One of President Truman's primary concerns in intervening in Korea was to keep that conflict limited. He and his advisors believed that Soviet Premier Josef Stalin had orchestrated the North Korean attack as a feint to draw American forces into Asia while the Soviets launched the main communist thrust against Western Europe. Truman also thought that the North Korean aggression demanded a forceful response that would "serve as a symbol of the strength and determination of the West" to oppose future communist encroachments.[20] Despite his willingness after Inchon to expand America's war aim to eliminating communism from the Korean Peninsula, he did not intend to risk a third world war to achieve that objective. Once the Chinese entered the fray, American aims reverted to the preservation of an independent, noncommunist South Korea. In the stagnant conventional war that resulted, the progressive tendencies of American airpower contributed little.

Yet the table was seemingly set for bombing to provide an independent victory conforming to Air Corps Tactical School tenets. After American and United Nations (UN) forces stabilized a position near the 38th parallel in summer 1951, negotiations began with the Chinese and North Koreans to end the fighting. Having secured South Korea, Truman and his advisors would not endorse further ground advances, and bombing became the military instrument of choice. Because concerns remained about expanding the war, Truman, the Joint Chiefs of Staff, and the UN commanders, Generals Matthew Ridgway and Mark Clark, initially circumscribed

bombing's use. Targets first consisted of roads and railroads to cut the communist flow of men and supplies to frontline positions along the 38th parallel. Next, American aircraft attacked North Korea's hydroelectric facilities. Although the transportation attacks reduced North Korea's resupply capability to a trickle, and the hydroelectric raids destroyed 11 of 13 major power plants and produced an almost total blackout in North Korea for more than 2 weeks,[21] neither effort ended the war. As long as communist troops remained static along the 38th parallel, with no threat of attack from UN ground forces that would cause them to expend additional resources, their minimal supply needs made them impervious to any aerial attacks against transportation or industry.

Airpower, applied against the designated "web" of North Korea, thus could not deliver the quick victory that its progressive proponents proclaimed. As a result, in August 1952, American aircraft bombed military targets in Pyongyang, which had not been attacked in almost a year, and caused more than 7,000 civilian casualties.[22] In May 1953, with a new Commander in Chief in Washington firmly committed to ending the war rapidly, American aircraft bombed North Korea's irrigation dam system, threatening its civilian populace with starvation. Whether those raids spurred the war's end remains a matter of conjecture. President Dwight Eisenhower claimed that he also threatened the Chinese with a nuclear assault on Manchuria, but his success in conveying that threat, and its impact if he did so, also remains subject to speculation.[23] In all probability, the key reason for the July 1953 armistice was the death of Stalin 4 months earlier, which removed the Soviet Union's impetus to continue the conflict.

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with bombing, [Johnson] *could orchestrate the application of military force much like turning a water spigot*

As in World War II, airpower contributed brute force in an effort to end the conflict quickly, but Korea differed in many ways from the preceding war. For the United States, the war aim and the type of war fought did not vacillate from 1941 to 1945. America's war aim in Korea shifted three times during the first year, and the fast-paced conventional war of movement that typified the opening year then disappeared into a 2-year stalemate along the

38th parallel. Korea also differed from World War II in presenting a powerful but silently active enemy—the Soviet Union—and an unexpectedly overt belligerent—China. The uncertain behavior of the two communist powers produced friction that stymied an immediate air effort against North Korea's hydroelectric power and irrigation dam systems. Americans viewed the Korean conflict through the prism of the Cold War, and indeed the war played out with all belligerents aware that other nations watched and their views counted in the ideological struggle between communism and capitalism. Given those circumstances, the notions of progressive airpower proved tenuous at best. They would prove even more so in the next limited conflict.

Southeast Asian Dilemma

Much like the Korean War, the frictional element of uncertainty affected how America applied military force in Vietnam. The threat of an expanded conflict haunted President Lyndon Johnson and shaped much of his wartime decisionmaking. So too did his concern for his Great Society programs. Though he preferred to focus on domestic issues, Johnson was not about to permit a communist takeover of South Vietnam. "I knew from the start that I was bound to be crucified either way I moved," he later reflected. "If I left the woman I really loved—the Great Society—in order to get involved with that bitch of a war on the other side of the world, then I would lose everything at home. . . . But if I left that war and let the Communists take over South Vietnam, then I would be seen as a coward and my nation would be seen as an appeaser and we would both find it impossible to accomplish anything for anybody anywhere on the entire globe."[24] His dilemma was finding a way to fight that would prevent South Vietnam's collapse while causing minimum disruption to his Great Society—and minimum concern to North Vietnam's two powerful benefactors, China and the Soviet Union.

The progressive notions of American airpower seemed to offer Johnson the ideal solution in spring 1965. With bombing, he could orchestrate the application of military force much like turning a water spigot. If the American public's attention started to focus on the intensity of the air war rather than on Johnson's domestic agenda, he could turn down the bombing pressure; he could do the same if Chinese or Soviet reactions to bombing were bellicose. Conversely, he could turn up the

bombing if North Vietnam refused to curtail its support to the insurgency in the South. Sending American Airmen into the skies over North Vietnam risked few lives compared to opposing the insurgency with ground forces. North Vietnam's sparse rail lines and meager industrial apparatus appeared vulnerable to the might of American airpower. That force had made the Soviet Union cower less than 3 years before in the Cuban missile crisis, and now the opponent was, in Johnson's words, "a raggedy-ass little fourth-rate country."[25] The prospect of rapid, cheap victory was alluring.

Unfortunately, the key assumptions that made airpower so appealing did not prove accurate. Most significantly, flawed convictions regarding the enemy's approach to war helped

could eliminate North Vietnam's warmaking capability, the Viet Cong insurgency would collapse in turn. That premise spurred the recently retired General LeMay to declare in 1965 that he could have bombed the North Vietnamese "back to the Stone Age" by destroying 94 key targets.[26] Rather than a plea for massive civilian destruction, LeMay's comment hearkened to progressive precepts. His 94-target plan included no attacks on civilian population centers and specified 82 fixed sites and 12 transportation lines deemed the vital elements of the North's modern warmaking capability.[27] Yet neither the North Vietnamese nor their Viet Cong allies fought a "modern" war. Until the 1968 Tet offensive, despite the entry and significant buildup of American ground forces, the typical

South Vietnam—a total that just seven 2½-ton trucks could carry.[28]

Dubbed Operation *Rolling Thunder*, Johnson's air campaign against North Vietnam persisted from March 1965 to October 1968, and President Ho Chi Minh made the most of it. Johnson's fears of Chinese or Soviet intervention, along with his emphasis on the Great Society, caused him to place significant controls on the bombing, to include a gradual increase in intensity instead of the "sudden, sharp knock" desired by air commanders. Ho understood that those restrictions would limit the pain inflicted on his country and thus allow him to *benefit* from American airpower. Courting both Moscow and Beijing to replace war materiel as well as to provide additional aid, he adroitly played one against the other, and as a result the gross domestic product of North Vietnam actually increased each year of *Rolling Thunder*.[29]

The airstrikes also provided the perfect vehicle for rallying popular support for the war. The damage that they caused had little impact on the conflict (*Rolling Thunder*'s 643,000 tons of bombs killed an estimated 52,000 civilians out of a population of 18 million[30]), but they provided tangible evidence of America's perceived intent to destroy North Vietnam. "In terms of its morale effects," RAND analyst Oleg Hoeffding observed in 1966, "the U.S. campaign may have presented the [Northern] regime with a near-ideal mix of intended restraint and accidental gore."[31] Like the Korean conflict, Vietnam occurred against the backdrop of the Cold War and on the stage of world public opinion. For many around the globe, *Rolling Thunder* conveyed the image of an American Goliath pounding a hapless David—the antithesis of the view that Johnson had hoped to portray.

The "tactical" bombing that occurred on battlefields in South Vietnam heightened the perception that American military power had run amok in the war. In contrast to the detailed restrictions placed on bombing targets in North Vietnam, attacks on targets in the South had few limitations. One-half of all air-dropped ordnance during the 8-year span of America's active combat involvement in Southeast Asia fell on the territory of its southern ally—roughly four *million* tons of bombs.[32] (American aircraft dropped three million tons on Laos and one million tons on North Vietnam.) Many of the bombs deposited on South Vietnam fell on "free fire zones," areas deemed hostile, from which all civilians had

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"tactical" bombing on battlefields in South Vietnam heightened the perception that American military power had run amok

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create a flawed bombing program. American political and military leaders appreciated that the war in the South was a guerrilla conflict waged primarily by the indigenous Viet Cong. American leaders also believed that the Viet Cong could not fight successfully without North Vietnamese support. Thus, if bombing

enemy soldier fought an average of only 1 day a month. This minimal combat activity produced correspondingly minimal supply needs. By August 1967, an estimated 300,000 enemy troops (245,000 Viet Cong and 55,000 North Vietnamese army soldiers) could exist on only 34 tons of supplies a day from sources outside

U.S. Air Force

KC–135 refuels F–105s over Vietnam

been forcibly removed. In many cases, though, the civilians returned, and such indiscriminate bombing contributed significantly to an estimated 1.16 *million* South Vietnamese civilian casualties during the war.[33]

Johnson's tight controls on bombing the North could not change the perceptions of carnage, and those views endured for President Richard Nixon's Operation *Linebacker* air campaigns against North Vietnam in 1972. Nixon first bombed the North in response to its Easter offensive in March and began a second *Linebacker* campaign in December to spur stalled peace negotiations. By spring 1972, the war had finally become the fast-paced, conventional war of movement desired by air leaders—much of the Viet Cong had been decimated in the 1968 Tet uprising. The first generation of "smart" munitions also appeared—bombs with true precision capability that could destroy the bridges now essential to transporting the fuel and ammunition needed by a fast-moving army. Equally important, massive bombing in *South* Vietnam combined with South Vietnamese army counteroffensives to thwart the North Vietnamese advance. Nixon's diplomacy severed North Vietnam from its close ties to China and the Soviet Union, eliminating much of the uncertainty regarding Chinese and Soviet actions and allowing him to remove some restrictions that had hampered *Rolling Thunder*. December's intense attacks against targets in Hanoi and Haiphong, primarily conducted by B–52s, killed 1,623 civilians, a remarkably low number for 20,000 tons of bombs in 11 days.[34] Nonetheless, the London *Times* observed that Nixon's action was "not the conduct of a man who wants peace very badly," while Hamburg's *Die Zeit* concluded that "even allies must call this a crime against humanity."[35]

To many in the U.S. Air Force, the signing of the Paris Peace Accords in late January 1973 proved that Nixon's "unfettered" bombing could have achieved success earlier. An aging LeMay likely reflected the view of many air commanders by telling a reporter in 1986 that America could have won in Vietnam in "any two-week period you want to mention."[36] That response ignored key changes in the war that had occurred from the Johnson presidency to Nixon's. It further dismissed distinctive differences in the war aims of the two Presidents. Johnson fought to create a "stable, independent, non-communist South Vietnam," a much tougher objective than Nixon's amorphous "peace with honor." The tenets of progressive airpower appeared ill suited for a limited war

against an insurgent enemy that rarely fought. *Rolling Thunder* argued strongly that bombing could not achieve a quick or an easy solution in future conflicts against similar opponents for aims that were less than total, and that an uncertainty regarding results—both in terms of how they might affect more powerful allies and how the world community at large might perceive them—would likely restrict the use of airpower. Yet most Airmen saw *Linebacker*, not *Rolling Thunder*, as the model to learn from, and they turned their attention to the prospect of a nuclear confrontation with the Soviet Union.

Warden contended that leadership was the most critical ring because it was "the only element of the enemy . . . that can make concessions"

Rings in the Desert

One Air Force officer who focused on conventional war was Colonel John Warden. He had flown as a forward air controller in Vietnam, and during the decades that followed, he developed ideas that would form the basis of America's air campaign plan for the 1991 Persian Gulf War. Like Billy Mitchell, Warden stressed airpower's "revolutionary" characteristics, and he fully shared Mitchell's

progressive vision. Warden believed that the creation of stealth aircraft, extremely precise "smart" munitions, and bombs with significant penetrating power gave the United States a dramatic capability to fight limited, conventional wars by relying almost exclusively on airpower. He argued that those three technological developments enabled American air forces to attack a prospective enemy's "centers of gravity" directly, which they could do by circumventing enemy surface forces. "Airpower then becomes quintessentially an American form of war; it uses our advantages of mobility and high technology to overwhelm the enemy without spilling too much blood, especially American blood."[37]

For Warden, the key center of gravity of a nation—or of any organized group capable of fighting—was leadership. That element comprised the center ring of his five-ring model that specified the major components of war-making capability. Surrounding leadership was a ring of key production, which for most states included electricity and oil. Surrounding key production was a ring of infrastructure, comprising transportation and communications,

F–15Es during Operation *Desert Shield*

U.S. Air Force (Phan Chad Vann)

and surrounding it was a ring of population, which included food sources. Finally, a ring of fielded military forces surrounded population. Warden contended that leadership was the most critical ring because it was "the only element of the enemy . . . that can make concessions."[38] If that ring could not be attacked directly, the goal then became to confound the leadership's ability to direct warmaking activities, and airpower could target the outer rings. Yet the focus of the attacks remained the impact on the center ring. He cautioned against attacking military forces, which he labeled "a means to an end," and urged that they "be bypassed—by strategy or technology."[39] Warden also eschewed direct attacks on civilians, and his rationale for attacking industry mirrored an Air Corps Tactical School text: "If a state's essential industries (or, if it has no industry of its own, its access to external sources) are destroyed, life becomes difficult, and the state becomes incapable of employing modern weapons and must make concessions."[40]

Warden's progressive notions of airpower meshed well with the political objectives sought by

President George H.W. Bush following Saddam Hussein's invasion of Kuwait in August 1990. At the time of the Iraqi assault, Warden was the Air Staff's deputy director of Checkmate, its plans and warfighting division. A combination of factors led to his ideas forming the basis for the allied air campaign. Key among them was that his notions suited the President's desires. Bush viewed Saddam's aggression as a grave threat to the energy needs of the United States and its allies, but he would not condone devastating Iraq to remove the threat. Indeed, Bush viewed America's need to respond as a moral crusade, part of "the burden of leadership and the strength that has made America the beacon of freedom in a searching world."[41] He outlined his war aims as the removal of Iraqi troops from Kuwait, restoration of the Kuwaiti regime, protection of American lives, and conditions that would provide "security and stability" in the region. An air campaign that targeted Saddam—whom Bush equated to Hitler—or his power base would help fulfill those goals.

Warden's plan, named Operation *Instant Thunder* to highlight its differences from *Rolling Thunder*'s gradualism, called for 6 days of intense bombing against Saddam's command centers; transportation and communications complexes; nuclear, biological, and chemical

facilities; and the Iraqi air force and its air defenses.[42] Relying on its dramatic precision bombing capability, American airpower would scrupulously avoid Iraqi civilians and extreme damage to the Iraqi economy. Lieutenant General Charles A. Horner, the Air Force commander who conducted the air campaign, thought that Warden's scheme relied too heavily on bombing Baghdad targets instead of the Iraqi army. Nevertheless, Horner kept Warden's intent to isolate Saddam in the plan's final version, and the first 6 days of Operation *Desert Storm* were, in large measure, a test of Warden's concepts.[43] Air planners hoped that those initial strikes "would not just neutralize the government, but change it by inducing a coup or revolt that would result in a government more amenable to coalition demands."[44]

Because he directed an abundance of airpower—more than 1,800 aircraft from 10 countries[45]—Horner could use it to attack more than simply leadership targets, and attacks against Iraq's Republican Guard divisions began soon after the start of the air campaign. Some of those strikes involved the use of smart munitions against Iraqi armor. The "tank plinking" missions portended a vastly increased scope for the notions of progressive

Col John A. Warden III, USAF (seated second from left), with planners on Project Checkmate, the aerial attack to start Operation *Desert Storm*

U.S. Air Force

airpower; 84 Air Force F–111s destroyed more than 1,500 armored vehicles with precision ordnance.[46] Whereas visionaries such as Mitchell and Warden argued that strategic bombing could obviate the need to engage enemy forces by wrecking vital nodes in the state's infrastructure, a seed was planted that airpower's incredible precision capability might be able to end—or thwart—wars quickly and easily by destroying key components of an enemy's deployed military apparatus on the battlefield.

Yet incredible precision did not equate to infallible bombing. The improved technology could not eliminate Clausewitz's friction from the air campaign. An estimated 2,300 Iraqi civilians died before the coalition ground offensive began, and airpower caused most of those deaths.[47] The element of chance had a profound impact on the bombing when two stealth fighters destroyed the al Firdos bunker in Baghdad, an Iraqi command facility, with smart munitions on February 13, 1991. Unknown to the Americans who planned and conducted the mission, the bunker harbored large numbers of Iraqi civilians, and more than 200 died in the attack. Television broadcasts instantly displayed the destruction to audiences around the globe. The episode halted all bombing in Baghdad for the next 4 days, and thereafter the theater commander, General Norman Schwarzkopf, USA, personally reviewed any Baghdad targets selected for attack.[48] Only five locations in Baghdad were hit for the remainder of the war.[49] Bombing also failed to destroy conclusively any of Iraq's mobile Scud missile launchers, despite an extensive air effort devoted to them.[50]

In the end, airpower doubtless helped spur the ouster of Iraqis from Kuwait. The airpower that counted most, though, in securing the withdrawal was not the precision effort against leadership targets, but rather the massive,

F–16C patrols skies over Kosovo during Operation *Allied Force*

U.S. Air Force (Brad Fallin)

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> *airpower had delivered the goods, but the goods were not exactly the ones its advocates had promised*

comparatively imprecise bombing of Iraq's deployed armed forces. Of the 227,000 bombs and missiles delivered during the 43 days of the war, only 15 percent were precision munitions.[51] The vast bulk of the remainder fell on Iraqi troops that were arrayed to move or defend in conventional fashion. When an Iraqi armored force attempted to advance into the Saudi Arabian town of Khafji at the end of January

1991, coalition airpower annihilated it. The small percentage of bombs dropped on leadership targets severely damaged those targets by the end of January 1991; in fact, aircraft bombed almost 70 percent of Warden's *Instant Thunder* targets in the first 3 days of the air campaign.[52] Still, the Saddam regime continued to function, no coup materialized, and the uprisings by Shiite and Kurdish groups occurred only after Iraqi forces began leaving Kuwait—not in response to the Baghdad attacks. The mammoth amount of airpower applied against Iraqi troops shocked and dismayed many of them—100,000 who were carpet-bombed deserted[53]—and facilitated a fast-paced, "hundred-hour" ground war to

take Kuwait. Airpower had delivered the goods, but the goods were not exactly the ones its advocates had promised.

Bombs in the Balkans

The "video game" images of bombs placed in air shafts endured as a new American President confronted a series of crises. On two occasions in the Balkans, Bill Clinton turned to bombing to prevent European destabilization and to help achieve humanitarian goals that he believed were essential to America's welfare. Beginning in 1993 in Bosnia, President Clinton committed American airpower to UN and North

Atlantic Treaty Organization (NATO) efforts to preserve a multiethnic Bosnian state and halt Bosnian Serb ethnic cleansing against Muslim and Croat populations. He eschewed sending ground forces, convinced that such an option might prove too costly in terms of lives risked and damage inflicted. Airpower's sensational precision capability promised to minimize both concerns. "Airstrikes cannot win a war, but they can raise the price of aggression," Clinton commented on the eve of beginning the American-led bombing campaign *Deliberate Force* in August 1995.[54]

Operation *Deliberate Force* comprised 12 days of bombing between August 29 and September 14, 1995. It was indeed an exercise in precision bombing, as 708 of the 1,026 bombs dropped were precision-guided munitions.[55] Most of the 48 targets consisted of supply depots, air defenses, and Bosnian Serb troops and their weaponry. The attacks produced no collateral damage that the Bosnian Serb leaders could exploit, and Serbian President Slobodan Milosevic, who backed the Bosnian Serbs with troops and equipment, admitted that only 25 civilians died in the raids.[56]

Milosevic was instrumental in persuading the Bosnian Serb leadership to halt their attacks and remove heavy weapons from Sarajevo; their agreement to comply led to the end of *Deliberate Force*. Yet Bosnian Serb leaders and Milosevic were also extremely concerned by a rapidly moving 100,000-man offensive from the Croatian army in July against the northern areas of Serb-held Bosnia, as well as an invasion from the south mounted by the Muslim-Croat forces of the Bosnian Federation. By mid-September, the amount of Bosnian territory under Serb control had shrunk from 70 to 51 percent, with the prospect of more losses to follow in a fast-paced conventional conflict.[57] President Clinton's September 20, 1995, declaration that "the NATO air campaign in Bosnia was successful" and "show[ed], once again, that firmness pays off" omitted the fact that much of the firmness had come from the pressure of ground power.[58]

Clinton's perception that airpower had coerced the Bosnian Serbs caused him to return to that formula in response to Serbian ethnic cleansing in Kosovo. His motivations for bombing in 1999 paralleled his 1995 objectives. "Why are we in Kosovo?" he asked rhetorically during the air campaign designated Operation *Allied Force*. "Because we have a moral responsibility to oppose crimes against humanity and mass ethnic and religious killing where we can. Because we have a security responsibility to prevent a wider war in Europe, which we know from our two World Wars would eventually draw America in at far greater cost in lives, time, and treasure."[59] Although the 1999 Kosovo conflict was a periodically waged guerrilla struggle, unlike the conventional war that Bosnia had become by 1995, Clinton believed that the progressive notions of airpower offered the best chance to accomplish his Kosovo goals at a minimum cost. He further thought that bombing was a more acceptable solution than a ground invasion not only to the American public but also to the 19 states comprising NATO, and he placed a high premium on preserving the Alliance. Yet he understood that maintaining NATO support—as well as an endorsement from the global community at large—would be difficult "at a time when footage of airstrikes is beamed to homes across the world even before our pilots have returned to their bases, a time when every accidental civilian casualty is highlighted."[60]

To compel Milosevic to stop ethnic cleansing in Kosovo, Clinton began *Allied Force* on March 24, 1999. U.S. Army General

U.S. Air Force (Paul Caron)

Aircrew members receive premission briefing prior to airstrikes on targets near Sarajevo

U.S. Air Force (Edward Snyder)

F–117 Nighthawk drops GBU–28 laser-guided bomb unit

Wesley Clark, NATO's Supreme Allied Commander, oversaw the air campaign, initially designed for 3 days of precision bombing. Clark's air commander, Air Force Lieutenant General Michael Short, wanted a more extensive air effort against targets in Belgrade, albeit with precision munitions. Disagreements on target priorities continued throughout the 78-day air campaign, with Clark preferring to focus on Serb forces in Kosovo, and Short stressing targets in Belgrade and Serbia proper. Both men, though, fully appreciated the President's desire to conduct an air campaign that all NATO nations would find acceptable. American aircraft flew the bulk of the sorties and dropped most of the 28,000 munitions expended, 38 percent of which were precision-guided.[61] Only one American aircraft—and no American pilots—was lost, providing a measure of vindication for the progressive tendencies that had sparked the campaign. A further indication that the progressive approach had succeeded came in the civilian death toll. The emphasis on precision bombing, reinforced by restrictive rules of engagement for aircrews, produced collateral damage that killed just 500 noncombatants.[62]

As in *Desert Storm*, however, the focus on precision could not eliminate friction and its impact. The relatively small number of civilians who died in *Allied Force* significantly affected the conduct and tenor of the air campaign. On April 14, a pilot who thought that trucks filled with refugees near Djakovica were part of a military convoy bombed the vehicles, killing 73 noncombatants. The Serbs portrayed the incident as a "regular occurrence" and amplified those sentiments after a precision-guided bomb destroyed a Belgrade bridge seconds before a train began crossing it. Clark personally approved all raids on Belgrade following the bridge incident.[63] Although only four people died from the war's most notorious bombing error, a mistake in labeling Belgrade's Federal Procurement and Supply Directorate that caused B–2 pilots to bomb the Chinese embassy on the night of May 7, the repercussions were profound. The miscue produced a Washington-directed halt to any further bombing in the Serb capital for the next 2 weeks.[64] Referring to the high volume of air attacks that occurred that evening, NATO spokesman Jamie Shea stated, "A great deal was done accurately and professionally. But everything is overshadowed by one very, very bad mistake."[65]

Besides producing a dismal picture of American military prowess, the friction from

Allied Force had far more severe ramifications. NATO's bombing may well have triggered a massive Serb effort to eradicate Kosovo's Albanians. The true exodus of Kosovar Albanians coincided with the start of the air campaign. Approximately 18,500 refugees had fled to Albania before the bombing began; 5 days after it started, an additional 65,000 had poured across the border.[66] Spurred by greatly intensified Serb efforts at ethnic cleansing, 620,000 Kosovar Albanians were refugees by mid-April,

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although only four people died from the war's most notorious bombing error, the repercussions were profound

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a total that climbed to 800,000 a month later.[67] By the end of *Allied Force* in June, Milosevic's forces had expelled half of Kosovo's 1.6 million Albanians (and most of the remainder were internally displaced), killed roughly 3,000 people, destroyed 600 settlements, and caused $1.3 billion in damage.[68] Ultimately, most of the survivors tried to return home after the war but in many cases found their homes ransacked or ruined. The desire for retribution became a hallmark of the fragile peace that followed, with the previously persecuted Albanians now recognized as Kosovo's majority populace.

Airpower played an uncertain role in securing the peace. To some, such as the distinguished British military historian John Keegan and Dartmouth professor Andrew Stigler, bombing was *the* factor that caused

Milosevic to cave to NATO demands.[69] "There are certain dates in the history of warfare that mark real turning points," declared Keegan. "Now there is a new turning point to fix on the calendar: June 3, 1999, when the capitulation of President Milosevic proved that a war can be won by airpower alone."[70] Other observers, such as University of Chicago professor Robert Pape and RAND analysts Benjamin Lambeth, Daniel Byman, and Matthew Waxman, were not so sanguine. They maintained that a combination of factors, to include Serbia's loss of Russian support and NATO's threat of a ground invasion, produced Milosevic's submission.[71] In the final analysis, *Allied Force* provided America with a precedent for using lethal airpower as a means of humanitarian intervention and may have spurred the human catastrophe that it was designed to prevent. Still, for many American political leaders and military chiefs, Keegan's progressive vision of the air war was the one that resonated.

The Challenges of "Long" War

For President George W. Bush, airpower offered the quickest means to respond to the most costly acts of terrorism on American soil. Bush viewed the September 11, 2001, attacks as an enormous threat not only to the Nation's security but also to American values. "This enemy tries to hide behind a peaceful faith," he remarked on November 8, 2001. "But those who celebrate the murder of innocent men, women, and children have no religion, have no conscience, and have no mercy." Thus, he insisted, "We wage a war

Ground crews ready F–15E Strike Eagle for combat mission

U.S. Air Force (Dave Nolan)

to save civilization itself."[72] Airpower was an essential component of that war effort, and the President sought to apply it in a manner that highlighted its progressive attributes. To wreck Taliban and al Qaeda strongholds in Afghanistan, American forces, supported by NATO units, blended "real-time intelligence, local allied forces, special forces, and precision airpower" in Operation *Enduring Freedom*.[73] Bush commented in December 2001 that precision-guided munitions offered "great promise" and "have been the majority of the munitions we have used. We're striking with greater effectiveness, at greater range, with fewer civilian casualties. More and more, our weapons can hit moving targets. When all of our military can continuously locate and track moving targets—with surveillance from air and space—warfare will be truly revolutionized." Thus, he maintained, America was "redefining war on our terms."[74] Those terms included the tenets of progressive airpower.

By November 12, after 5 weeks of air attacks, roughly 6,000 bombs and missiles had fallen on Afghanistan, of which more than 2,300 were satellite-guided 2,000-pound joint direct attack munitions (JDAMs).[75] Much of the bombing occurred in remote areas, and Secretary of Defense Donald Rumsfeld stressed that "every single target was characterized as . . . low collateral damage."[76] The emphasis on using precision munitions to avoid civilian casualties remained a hallmark of the air campaign. Yet the desire to keep civilian losses to a minimum—and maintain the good graces of observers throughout the Muslim world—affected airpower's ability to produce positive results. In the first 6 weeks of *Enduring Freedom*, on 10 occasions air commanders believed that they had located top Taliban and al Qaeda leaders but failed to receive clearance to fire before the enemy escaped.[77]

Despite the overwhelming emphasis on avoiding civilians, friction persisted, and bombing still produced collateral damage. In October, five villages near Kandahar collectively reported, in accounts corroborated by local commanders and Afghan officials, more than 100 civilian victims of U.S. airstrikes.[78] Also in that month, American aircraft attacked warehouses in Kabul that the Red Cross claimed it used to store foodstuffs and blankets. Red Cross officials maintained that they had marked the warehouses with red crosses painted on the roofs of the buildings, while American spokesmen countered that Taliban troops had removed supplies from the facility into military

vehicles parked inside its gates.[79] Regardless of the truth, the perception emerged that Americans had deliberately bombed the facility, a belief made stronger by the limited amount of airpower used in *Enduring Freedom* (its sortie count was roughly half that of *Allied Force*[80]) and the continued American declarations that they avoided attacks on nonmilitary structures. "The constant message that there are few 'high-value targets' in Afghanistan is intended to educate the public that the war will not be won with a cruise missile," asserted analyst William Arkin. "But the end result fosters the impression that if there aren't good military targets, then the United States must be bombing civilians."[81]

> *the desire to keep civilian losses to a minimum—and maintain the good graces of observers throughout the Muslim world—affected airpower's ability to produce positive results*

Precision airpower could not eliminate friction and its accompanying collateral damage, nor could it singlehandedly render Taliban and al Qaeda military forces impotent. While it could help defeat the Taliban regime, wrecking its fighting capability required troops on the ground. President Bush relied on the hodgepodge armies of the Northern Alliance—whose fighters often massed together on horseback—to accomplish that task. That force of about 20,000 men, supplemented by American bombs and a small number of American and NATO special operations teams, advanced against and defeated 25,000 Taliban and al Qaeda fighters by early December.[82] Yet President Bush's December 11 assertion that "these past two months have shown that an innovative doctrine and high-tech weaponry can shape and then dominate an unconventional conflict" missed the mark;[83] the war waged in Afghanistan, through the fall of Kandahar on December 9, was a conventional conflict that depended on a ground offensive, backed by heavy amounts of airpower. Moreover, the airpower needed was a blend of precision ordnance and "dumb" bombs—the rapier proved useful against certain "high value" targets, while the bludgeon remained effective against deployed enemy troops in unpopulated areas. One Northern Alliance warlord noted that bombs had killed more Taliban in 2 days

through close air support than the Alliance had been able to kill during the previous year.[84]

The President concluded from the destruction of the Taliban regime in Afghanistan that the progressive notions guiding that venture could also remove a recalcitrant Saddam from power in Iraq. Bush believed that Saddam possessed weapons of mass destruction and planned to use them against America or its allies. To preclude that possibility, he announced on March 19, 2003, that U.S. and coalition forces had begun "military operations to disarm Iraq, to free its people and to defend the world from grave danger."[85] Airpower provided the initial thrust of Operation *Iraqi Freedom* and appeared to offer an efficient solution to the Saddam problem. When on-scene intelligence reported that the Iraqi dictator would spend the night of March 19 at a farm near Baghdad, Bush ordered an airstrike on the facility.[86] Two F–117 stealth fighters each dropped a pair of laser-guided EGBU–27 "bunker buster" bombs on the target, and then 36 Tomahawk cruise missiles slammed into it, but the raid did not kill Saddam.

Despite that failure, precision bombing was the linchpin of the "shock and awe" air campaign 2 days later. According to Harlan Ullman, the concept's architect, the goal was "to create in the minds of the Iraqi leadership and their soldiers, this Shock and Awe, so they are intimidated, made to feel so impotent, so helpless, that they have no choice but to do what we want them to do, so the smartest thing is to say, 'This is hopeless. We quit.'"[87] American political and military leaders did not use the term *shock and awe* directly, though clearly their intent matched Ullman's. After more than 1,500 bombs and cruise missiles had struck Iraqi governmental and military installations on the night of March 21, General Tommy Franks, USA, commander of U.S. Central Command, remarked, "This will be a campaign unlike any other in history, a campaign characterized by shock, by surprise, by flexibility, by the employment of precision munitions on a scale never before seen, and by the application of overwhelming force." He referred to the previous evening's attacks as "decisive precision shock [by] shock air forces."[88] Secretary of Defense Rumsfeld agreed, observing that coalition forces would end Saddam's dictatorship "by striking with force on a scope and scale that makes clear to Iraqis that he and his regime are finished."[89]

While the raids did indeed produce a fantastic display of American military prowess

seen worldwide, they did not compel surrender or instantly cripple Iraqi warfighting capability. Furthermore, the great media attention generated by the air attacks, and the previous hints that American leaders had made concerning their magnitude, caused several observers to focus on anticipated destruction. One report called the attack on Baghdad targets "the most devastating air raid since Dresden."[90] Aside from a sympathetic call from Russian President Vladimir Putin, the remainder of the calls President Bush received in the aftermath of the attacks were critical. Bush was upset that much of the world failed to appreciate the American ability to apply lethal doses of airpower precisely. He later noted that "it was not understood that the United States had found

a way to wage war that as much as possible spared civilians, avoided collateral damage and targeted the leaders and their means to fight and maintain power. Wars of annihilation, carpet-bombing and fire-bombing cities should be a thing of the past."[91]

Such progressive sentiments continued to guide the application of airpower as American and coalition ground forces advanced across Iraq. By late April 2003, the Air Force had dropped roughly 18,000 munitions, which included 11,000 guided and 7,100 unguided bombs.[92] Many of those struck Iraqi army units. In stark contrast to the opening salvos of *Desert Storm*, in which only 7 percent of available allied aircraft bombed Iraqi ground forces, 51 percent of the aircraft

pummeled the Iraqi army at the start of *Iraqi Freedom*.[93] Most of those aircraft relied on precision-guided munitions, another key difference from *Desert Storm*.[94] When two Republican Guard divisions near Baghdad tried to use a sandstorm to shield them from bombing, an array of satellite-guided JDAMs decimated their formations.[95] On April 5, the U.S. Army's 3d Infantry Division made its famous "thunder run" through Baghdad, and 4 days later, Iraqis toppled the giant statue of Saddam in the center of the city. On May 1, President Bush flew to the deck of the USS *Lincoln* off the California coast and announced the end of major combat operations in Iraq.

Airpower had played an enormous role in the success achieved thus far, and its precision capability contributed significantly to the rapid ground advance. That capability also helped keep aircrew losses low by allowing the release of guided munitions from relatively safe standoff distances. Only three fixed-wing coalition aircraft had been shot down when the President made his May 1 announcement, and two of those had fallen by mistake to American Patriot air defense batteries. Yet once again, airpower's superb precision capability could not guarantee a pristine combat environment and the absence of friction. Although the Iraqi army and Republican Guard waged a predominantly conventional war, Iraq's potent Fedayeen militia used guerrilla tactics that often placed civilians at risk during bombing missions. Airpower alone killed an estimated 1,500 to 2,000 Iraqi noncombatants in the war's first 6 weeks.[96]

In helping to disarm Iraq and oust Saddam, airpower contributed the most by wrecking enemy formations and affecting the will of Iraqi troops. Whereas bombing had produced a 40 percent Iraqi desertion rate in *Desert Storm*, by early April 2003, the level of desertion during *Iraqi Freedom* reached 90 percent in some units, despite the shorter duration of bombing and the smaller amount of munitions used.[97] The rapid coalition ground advance through the heart of Iraq—territory that was off limits in 1991—undoubtedly contributed to the decision of many Iraqis to stop fighting. In addition, the fast-paced war of movement that highlighted Operation *Iraqi Freedom*'s first 6 weeks suited American political and military leaders—though it did not prove perfectly suited to the notions of progressive airpower. While precision bombing certainly helped to facilitate a rapid ground advance,

Bush was upset that much of the world failed to appreciate the American ability to apply lethal doses of airpower precisely

U.S. Air Force (Joshua Strang)

U.S. Navy

First STOVL F–35 is unveiled

its performance was sometimes less precise than its advocates proclaimed.

In the war that has evolved since the President's May 2003 speech, ground forces have dominated as well, and the notions of progressive airpower have often proved ill suited to the developing conflict. That struggle has been anything but a fast-paced conventional war with a clearly defined enemy. Indeed, the opponent faced by coalition forces has not been a constant, but rather a vacillating, amorphous entity comprising various combinations of foreign fighters, indigenous insurgents with disparate motivations, and criminal elements. Enemy fighting techniques have varied from an infrequently waged guerrilla war replete with suicide terrorism, booby traps, and roadside bombs to the massed uprising seen in Fallujah in spring 2004. Generally, when the enemy chooses to fight, civilians are likely to be close at hand, which increases the likelihood of friction and does not bode well for airpower effectiveness. America's war to achieve a stable, secure, democratic Iraq continues against the backdrop of the long war against global terrorism. Given that world public opinion will play a large role in determining the success of either conflict, America's use of force in Operation *Iraqi Freedom* cannot be seen as arbitrary. It must prove acceptable to those in Iraq who may be affected by it, as well as to those watching from outside the country, particularly throughout the Islamic world.

Regrettably, friction has continued to produce collateral damage in Iraq and casts grave doubt on airpower's ability to act as a progressive force. On May 19, 2004, American aircraft targeting an enemy safe house near the Syrian border killed as many as 20 people, who witnesses claimed were attending a wedding.[98] A little more than a year later in the same area, American aircraft again targeted insurgent safe houses, and Iraqi Interior Ministry officials reported 40 civilian deaths, mostly members of an extended family.[99] On October 17, 2005, a precision-guided bomb killed as many as 20 civilians, including 6 children, and wounded 25, according to an Iraqi doctor who treated the wounded. "[They] were not terrorists," stated the doctor. "They were only a bunch of civilians whose curiosity prompted them to gather around a destroyed Humvee."[100] More recently, airstrikes produced civilian casualties in Iraq on August 8 and October 12 and 23, 2007, and in Afghanistan on April 27 and 29, June 16 and 21, August 3, October 18 and 24, and November 28, 2007. All of those episodes received media attention.[101]

Skyways Ahead

American airpower faces an enormous challenge in Iraq and Afghanistan because of the progressive vision that has helped shape it during the past eight decades. That vision portrays bombing as a rational, just military instrument that helps achieve victory more quickly, with less destruction and fewer lives lost (on *both* sides), than surface combat. This notion of efficiency has had an enduring appeal to American Presidents as well as air commanders. In many respects, those political chiefs have found airpower's siren song even more enticing than have the airmen, for it seemingly offers political leaders a way to eliminate a perceived evil cheaply, and without having to inflict undesired pain. In the classic phrasing of Johns Hopkins professor Eliot Cohen, "Airpower is an unusually

> *friction has continued to produce collateral damage in Iraq and casts grave doubt on airpower's ability to act as a progressive force*

seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment."[102]

Presidents Roosevelt, Truman, Eisenhower, Johnson, Nixon, George H.W. Bush, Clinton, and George W. Bush all turned to bombing to help fight wars that each viewed as a just crusade, and each believed that airpower's progressive ideals blended well with war's righteous cause. All wanted to achieve victory by risking the fewest American lives, and relying on airpower risked fewer Americans than turning to armies or navies. In the final analysis, though, making airpower's progressive ideals a component of a wartime crusade leads to a strategy based more on faith than sound reasoning. Despite the promise of pristine warfare, the combination of high technology aircraft, munitions, and intelligence-gathering into such current concepts as "net-centric warfare" or "effects-based operations" cannot cure the great malady of friction that infects all military endeavors. Danger, exertion, uncertainty, and chance will forever comprise what Clausewitz called "the climate of war," and stealth, JDAMs, Predators, and Tomahawks cannot purify that environment.

To a degree, perhaps, airpower's high-tech components can reduce friction's effects. Iraqis in Baghdad during *Desert Storm* avoided defense ministries and other government installations but otherwise continued their lives as they had before the war.[103] During Operation *Iraqi Freedom*'s shock-and-awe air raids, the street lights remained on in Baghdad, as once

Cockpit camera view onboard F/A–18C shows Paveway laser-guided bombs and Sidewinder missiles

U.S. Navy (Steve Lightstone)

again bombs fell only on government and military facilities.[104] Yet eliminating bombing's fear factor does not necessarily increase the likelihood of achieving America's desired political objectives. Cohen, who directed the Gulf War Airpower Survey for the Air Force following *Desert Storm*, observed that "American airpower has a mystique that it is in the American interest to retain."[105] The notions of progressive airpower have consistently undercut that perspective. Moreover, the constant repetition of progressive aphorisms by American political and military leaders significantly heightens the impact of any mistakes made, as demonstrated by reactions to bombing the al Firdos bunker in Baghdad and the Chinese embassy in Belgrade.

The progressive notions of airpower would find a greater degree of acceptance if they were applied to *battlefield* uses rather than so-called strategic bombing. Billy Mitchell and his disciples viewed airpower as an instrument best used against the "vital centers" of an enemy state. John Warden thought along similar lines, focusing on a state's core leadership elements. To all of them, airpower transformed war because it could deliver a knockout punch that obviated traditional surface approaches to fighting and their concomitant death and destruction. Experience, though, has failed to vindicate those beliefs. Instead, American airpower has demonstrated an impressive capability to transform what occurs on the battlefield—*provided* that the war fought is a fast-moving, conventional conflict waged in areas away from a civilian populace.

The first year of the Korean War, Vietnam in 1972, the latter stages of *Desert Storm*, *Deliberate Force* in August-September 1995, *Enduring Freedom* through the middle

> *in all likelihood, the truly progressive characteristics of airpower are those that allow ground power to succeed more quickly and cheaply than it otherwise would*

of December 2001, and *Iraqi Freedom* until the beginning of May 2003 all provided some degree of opportunity for airpower to make important contributions to ground campaigns occurring simultaneously. During the specified portions of those conflicts, airpower suited the type of war that was fought, and that fact tended to reduce the amount of friction produced by bombing. In 1972 Vietnam, *Deliber-*

ate Force, and *Enduring Freedom*, local allies rather than American forces conducted the ground offensives, but airpower, working as the "hammer" to ground power's "anvil," made an ideal complement to the ground advances.[106] In all likelihood, the *truly* progressive characteristics of airpower are those that allow *ground* power to succeed more quickly and cheaply than it otherwise would.

Unfortunately, airpower is a progressive instrument only when it comes to applications that provide a minimal threat to the civilian populace. Battlefield support in remote areas, against a fast-moving enemy that fights conventionally, offers the greatest

U.S. Marine Corps (Jeremy W. Ferguson)

prospect for success. Bombing has limited applicability in a stagnant conventional conflict, like the last 2 years of the Korean War. In the often confused environment of counterinsurgent warfare, airpower's lethal application is more likely to prolong a conflict than shorten it and may well increase the ultimate numbers of lives lost by motivating angry civilians to join the ranks of enemy combatants. If the political goal is to "win hearts and minds," as was the case in Vietnam and appears to be the case in Iraq and Afghanistan, lethal airpower is an unlikely answer even when precisely applied. For bombing to succeed in such a conflict, impeccable intelligence information must exist regarding not only the target but also the

likelihood of collateral damage. Clausewitz's friction must remain dormant, and expecting that is a great gamble that America's political leaders may not wish to take.

The Zarqawi raid highlights several of the difficulties involved in using airpower against an insurgent commander. An attempt to pinpoint Osama bin Laden's deputy, Ayman al-Zawahiri, in a remote Pakistani village on the Afghan border and kill him with Hellfire missiles fired from a Predator drone failed in January 2006.[107] Zarqawi was equally elusive, and vital information from Jordanian security officials about his couriers was necessary to give the raid a chance for

Marines fire Shoulder-Launched Multipurpose Assault Weapon in Fallujah, Iraq

success. Those clues combined with more than 2 *years* of painstaking analysis from an American special operations task force and finally placed Zarqawi in an isolated farm house north of Baghdad. An Army Delta team outside the house verified that few civilians were present inside. Still, Zarqawi's death has not slowed Iraq's escalating sectarian violence. The January 2006 airstrike that missed Zawahiri but instead killed four al Qaeda "senior leaders" does not appear to have stymied al Qaeda activities in Afghanistan; moreover, that attack killed as many as 14 civilians, including women and children, and caused thousands of Pakistanis to demonstrate against the raid.[108] The example of Chechen leader Dzhokhar Dudayev, whom

the Russians killed with a television-guided bomb in 1995, shows that killing an insurgent leader does not necessarily assure the end of a ferocious insurgency.

While the failure to account for friction has undercut airpower's ability to achieve progressive results, it has also spurred resentment for progressive rhetoric. Episodes of collateral damage offset positive pronouncements of airpower accomplishments made by American leaders. Although proponents may proclaim that airpower can end wars quickly and cheaply, skeptics—in particular, non-American skeptics—can argue that such progressive views apply only to proponents who are also U.S. citizens. The emphasis on the speedy conclusion of hostilities and a small loss of life appears ideally suited to Americans, who have the world's greatest airpower and have displayed a willingness to use it in the last decade and a half as their first choice of military options.

To some observers, the espoused progressive notions are morally bankrupt, and really equate to assuring the smallest possible loss of life for *American* airmen, rather than guaranteeing no civilian casualties. Author David Halberstam summarized Operation *Allied Force* as follows: "The war may have started with Milosevic's brutality against the Albanians, but what much of the world was soon watching was a big, rich, technologically advanced nation bombing a poor, little country, and doing it in a way that showed its unwillingness to accept casualties itself."[109] Air Force Lieutenant General Michael Short, the air commander responsible for conducting *Allied Force*, seemingly confirmed that assessment by listing one of his primary objectives as "zero losses. . . . I wanted to destroy the target set and bring this guy [Milosevic] to the negotiating table without losing our kids."[110] Many of the world's onlookers likely nodded at Short's admission and believe that such emphasis will continue to guide applications of American airpower.

Many around the globe also discount American assurances that precision bombing will not threaten noncombatants, and still American political and military leaders make such promises, only to have episodes of friction prove them wrong. The more limited the conflict, the greater the progressive rhetoric seemingly becomes, and the greater the probability that friction will undermine the political goals sought. The key problem in proclaiming progressive airpower as an aspect of American military prowess is that it does not suit war's basic nature, much less the types of war America faces in the 21st century. As Clausewitz observes, the fundamental nature of war is constant, a swirling mix of violence, hatred, and enmity; calculated reason; and probability and chance. No amount of technological wizardry can remove those components, no matter how sophisticated the technology or how sound the intentions of those who apply it. Clausewitz adds, "Kind-hearted people might of course think there was some ingenious way to disarm or defeat an enemy without too much bloodshed, and might imagine this is the true goal of the art of war. Pleasant as it sounds, it is a fallacy that must be exposed: war is such a dangerous business that the mistakes which come from kindness are the very worst."[111] As long as they continue to rely on airpower to help achieve their objectives in war, American air commanders and their political leaders must acknowledge Clausewitz's realism, not the idealist notions of Mitchell and his successors. President Bush's subdued statements regarding the impact of the Zarqawi raids are steps in the right direction. **JFQ**

NOTES

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10 Major Muir S. Fairchild, lecture, "National Economic Structure," April 5, 1938, 3–5, Air Force Historical Research Agency, Maxwell Air Force Base, file number 248.2019A–10.

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14 James Parton, *"Air Force Spoken Here": General Ira Eaker and the Command of the Air* (Bethesda, MD: Adler and Adler, 1986), 526, n. 17.

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16 See Ronald Schaffer, *Wings of Judgment: American Bombing in World War II* (New York: Oxford University Press, 1985), on how military necessity affected America's air campaigns.

17 MacIsaac, *Strategic Bombing Survey*, vol. VII, *Summary Report (Pacific War)*, 26.

18 Carl Spaatz, "Strategic Airpower: Fulfillment of a Concept," *Foreign Affairs* 24 (April 1946), 385. In 1947, Spaatz became the first Chief of Staff of the newly formed U.S. Air Force.

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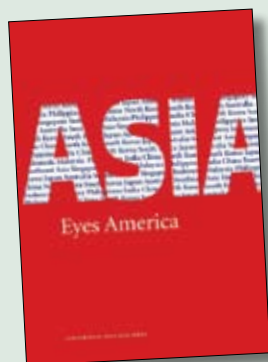[80] Rebecca Grant, "An Air War Like No Other," *Air Force Magazine*, November 2002, 31.

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If we get him, it may save a lot of lives and shorten
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